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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,351	12/21/2001	Eiichi Torigoe	4041J-000309/DVA	6345

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EXAMINER

DUONG, THO V

ART UNIT

PAPER NUMBER

3743

DATE MAILED: 04/04/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/032,351

Applicant(s)

TORIGOE ET AL. 3

Examiner

Tho v Duong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-7, 12-18 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) 4-7, 14, 16, 18 and 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12, 13, 15, 17 and 21-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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DETAILED ACTION

Election/Restrictions

Claims 4-7,14,16,18 and 24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election of species of figure 9 and subspecies of figure 10 was made **without** traverse in Paper No. 8.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12, 15,17 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada (US 6,237,678) in view of Terai et al. (US 4,203,490). Yamada discloses (figures 1 and 2) a heat exchanger (1) comprising a core portion (5) having a plurality of aluminum flat tubes (3); a plurality of inner fin (10) disposed inside the tubes; and a plurality of outer fins (4), the tubes (3) and the outer fins (4) being alternatively laminated; a tank (2) separately formed from the tubes wherein one end of each of the tubes is inserted into the tank; and a refrigerant flows within the tubes (3). Yamada does not disclose that the tubes are made of two-layers aluminum alloy and the fin is another aluminum alloy. Terai discloses (figures 1,2 and column 2, lines 28-47) a heat exchanger core comprising a tube (2) having a core layer, which is made of a first aluminum alloy including manganese, and a cladding metal layer (3), which is made of a second aluminum alloy that maintains anodic state in temperature range from room temperature to 100

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degrees; and an outer fin (1) which is made of a first aluminum alloy. Terai further discloses (column 1, lines 28-42 and column 3, lines 19-23) that the clad metal layer (3) and fin (1) are disposed to face a corrosive fluid such as atmosphere air to protect the core member from corrosion. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Terai's teaching in Yamada's heat exchanger core to protect the core member from corrosion. The method of forming "uniformly work-hardening", "work-hardened" and "bending" are not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight. Regarding claim 17, the limitation "the core evaporates the refrigerant" is not also given any patentable weight since stated in Ex parte Masham "a recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitation upon the claimed apparatus which differentiates it from a prior art apparatus satisfying the structural limitations of that claimed".

Claims 13 and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada and Terai as applied to claim 12 and 21 above, and further in view of Evans et al. (US 5,771,962). Yamada and Terai substantially disclose all of applicant's claimed invention except for the limitation that the fin having flat top through with each of the fin is joined to the tube in by brazing in a straight line. Evan discloses (figures 2 and 3) that heat exchanger that has an external corrugated fin (22) brazed on to a tube (12) wherein the corrugated fin (22) has a plurality of parallel folds and flat tops. Evan further discloses that (column 4, lines 30-38) that a brazing flux (13) is placed along a joint between the flat top of the fin and the tube, which is a straight line, to increase the joint strength between the corrugated fin and the tube. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use

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Evan's teaching in the combination device of Yamada and Terai to increase the joint strength between the corrugated fin and the tube.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Suzuki et al. (US 4,655,385) discloses a method of brazing an aluminum material using a brazing strip.

Suzuki et al. (US 6,193,140) discloses a brazing joint between the tube and the fin.

Takai et al. (US 5,295,302) discloses a heat exchange having tube comprises of two aluminum layers.

Usui et al. (US 5,072,789) discloses a heat exchanger made of aluminum with a fillet joining the tube and fin.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tho Duong whose telephone number is (703) 305-0768. The examiner can normally be reached on from 9:30-6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet, can be reached on (703) 308-0101. The fax phone number for the organization where this application or proceeding is assigned is (703)308-7764.

Any inquiry of a general nature or relating to status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0861.

Tho Duong

March 27, 2003

Henry Bennett
Supervisory Patent Examiner
Group 3700